| Name: | Section: |  |
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Answer all questions and show your work. Unsupported answers may receive *no credit*. You may not use a calculator on this quiz. Allow 15 minutes for the quiz.

1. (4 points) Use the method of cylindrical shells to find the volume generated by rotating the region R bounded by  $y = \sqrt{x}$ , x = 0 and y = 2, about the y-axis.

- 2. (6 points) Consider the curve  $y = x^3$ ,  $0 \le x \le 1$ .
  - (a) (2 points) Express the arc length of the curve as an integral. (Do not evaluate the integral.)
  - (b) (2 points) We rotate the curve about the x-axis to obtain a surface C. Express the surface area of C as an integral.
  - (c) (2 points) Find the exact surface area of C.